

CLAIMS

1. A polypeptide construct comprising at least one single domain antibody directed against IgE.

5 2. A polypeptide construct according to claim 1 wherein at least one single domain antibody is a *Camelidae* VHH.

10 3. A polypeptide construct according to claims 1 and 2 wherein at least one single domain antibody corresponds to a sequence represented by any of SEQ ID NOs: 1 to 11.

4. A polypeptide construct according to any of claims 1 to 3, wherein the number of anti-IgE single domain antibodies is at least two.

15 5. A polypeptide construct according any of claims 1 to 4, wherein at least one single domain antibody is a humanized *Camelidae* VHH.

20 6. A polypeptide construct according to any of claims 1 to 5, wherein a single domain antibody is an homologous sequence, a functional portion, or a functional portion of an homologous sequence of the full length single domain antibody.

7. A polypeptide construct according to any of claims 1 to 6; wherein the polypeptide construct is an homologous sequence, a functional portion, or a functional portion of an homologous sequence of the full length polypeptide construct.

25 8. A nucleic acid encoding a polypeptide construct according to any of claims 1 to 7.

9. A polypeptide construct according to any of claims 1 to 7 for treating and/or preventing and/or alleviating disorders relating to inflammatory processes.

30 10. Use of a polypeptide construct according to any of claims 1 to 7 for the preparation of a medicament for treating and/or preventing and/or alleviating disorders relating to inflammatory reactions.

11. A method for delivering an anti-target compound to a subject for the treatment of a disorder without being inactivated by administering thereto a polypeptide construct comprising one or more single domain antibodies directed against said target.

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12. A method according to claim 11 wherein said target is located in the gut system, and said a polypeptide construct is delivered orally.

13. A method according to claim 11 wherein said target is located in vaginal and/or rectal
10 tract, and said a polypeptide construct is delivered to the vaginal and/or rectal tract.

14. A method according to claim 11 wherein said target is located in nose, upper respiratory tract and/or lung, and said a polypeptide construct is delivered to nose, upper respiratory tract and/or lung.

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15. A method according to claim 11 wherein said target is located in intestinal mucosa, and said a polypeptide construct is delivered orally.

16. A method according to claim 11 wherein said target is located in the tissues beneath the
20 tongue, and said a polypeptide construct is delivered to the tissues beneath the tongue.

17. A method according to claim 11 wherein said target is located in the skin, and said a polypeptide construct is delivered topically.

25 18. A method according to claim 11 wherein said target is in, or accessible via the blood, and said a polypeptide construct is delivered orally, to the vaginal and/or rectal tract, nasally, by inhalation through the mouth or nose, to the tissues beneath the tongue, or topically.

30 19. A polypeptide construct comprising at least one single domain antibody directed against a target, for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by an anti-target therapeutic compound that is able to pass through the gastric environment without being inactivated.

20. A polypeptide construct comprising at least one single domain antibody directed against a target for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by an anti-target therapeutic compound that is able pass through the wall of the intestinal mucosa without being inactivated

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21. A polypeptide construct comprising at least one single domain antibody directed against a target for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by an anti-target therapeutic compound that is able pass through the wall of the nose, upper respiratory tract and/or lung without being inactivated

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22. A polypeptide construct comprising at least one single domain antibody directed against a target for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by an anti-target therapeutic compound that is able pass through the wall of vaginal and/or rectal tract without being inactivated

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23. A polypeptide construct comprising at least one single domain antibody directed against a target for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by a therapeutic compound that is able pass through the tissues beneath the tongue without being inactivated

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24. A polypeptide construct comprising at least one single domain antibody directed against a target for use in treating, preventing and/or alleviating the symptoms of disorders which are susceptible to modulation by a therapeutic compound that is able pass through the skin without being inactivated

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25. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is TNF-alpha and the disorder is inflammation.

30 26. A method or polypeptide according to claim 25, wherein a single domain antibody corresponds to a sequence represented by any of SEQ ID NOs: 12 to 14.

27. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is CEA and the disorder colon cancer.

28. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is EGFR and the disorder is any of head, neck, lung and colon cancer.

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29. A method or polypeptide construct according to claim 28, wherein a single domain antibody corresponds to a sequence represented by any of SEQ ID NOs: 23 to 44

30. A method according to any of claims 11 to 18 or polypeptide construct according to any of 10 claim 19 to 24, wherein said target is antigen of *Helicobacter pylori* and the disorder is any of indigestion, gastritis.

31. A method according to any of claims 11 to 18 or polypeptide construct according to any of 15 claim 19 to 24, wherein said target is antigen of *Mycobacterium tuberculosis* and the disorder is tuberculosis.

32. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is antigen of *influenza* virus and the disorder is flu.

33. A method according to any of claims 11 to 18 or polypeptide construct according to any of 20 claim 19 to 24, wherein said target is antigen of IgE and the disorder is allergic response.

34. A method or polypeptide construct according to claim 33, wherein a single domain 25 antibody corresponds to a sequence represented by any of SEQ ID NOs: 1 to 11

35. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is antigen of MMP and the disorder is cancer.

36. A method or polypeptide construct according to claim 35, wherein a single domain 30 antibody corresponds to a sequence represented by any of SEQ ID NOs: 15 to 22

37. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24, wherein said target is antigen of IFN-gamma and the disorder is any of cancer, transplant rejection, auto immune disorder.

5 38. A method or polypeptide construct according to claim 37, wherein a single domain antibody corresponds to a sequence represented by any of SEQ ID NOs: 45 to 70

39. A method according to any of claims 11 to 18 or polypeptide construct according to any of claim 19 to 24 wherein said target is any of antigen of *Helicobacter pylori*, antigen of 10 *Mycobacterium tuberculosis*, antigen of *influenza* virus.

40. A polypeptide construct comprising at least one single domain antibody directed against an internalising cellular receptor, and at least one single domain antibody directed against a therapeutic target.

15 41. A polypeptide construct comprising at least one single domain antibody directed against an internalising cellular receptor, and at least one therapeutic polypeptide or agent.

42. A polypeptide construct according to claims 40 and 41 wherein said internalising cellular 20 receptor is Epidermal Growth Factor receptor.

43. A polypeptide construct according to claim 42 wherein a single domain antibody directed against an internalising cellular receptor corresponds to a sequence represented by SEQ ID NO: 23 to 44.

25 44. A polypeptide construct according to claims 40 and 41 wherein said internalising cellular receptor is any of LDL receptor, FGF2r, ErbB2r, transferring receptor, PDGr, VEGr, or PsmAr.

45. A polypeptide construct according to any of claims 40 to 44 wherein a single domain. 30 antibody directed against a therapeutic target, is directed against PDK1.

46. A polypeptide construct according to claim 45 for use in treating cancer

47. A polypeptide construct according to any of claims 40 to 44 wherein a single domain antibody directed against a therapeutic target is directed against any of GSK1, Bad, caspase and Forkhead.

5 48. A polypeptide construct according to claim 47 for use in treating cancer.

49. Method for delivering an anti-target therapeutic compound to the interior of a cell comprising administering to a subject a polypeptide construct according to any of claims 40 to 48.

10 50. Method for delivering an anti-target therapeutic compound to the interior of a cell without being inactivated comprising administering to a subject a polypeptide construct according to any of claims 40 to 49.

15 51. A method according to claim 50 wherein said cell is located in the gut system, and said a polypeptide construct is delivered orally.

52. A method according to claim 50 wherein said cell is located in vaginal and/or rectal tract, and said a polypeptide construct is delivered to the vaginal and/or rectal tract.

20 53. A method according to claim 50 wherein said cell is located in nose, upper respiratory tract and/or lung, and said a polypeptide construct is delivered to nose, upper respiratory tract and/or lung.

25 54. A method according to claim 50 wherein said cell is located in intestinal mucosa, and said a polypeptide construct is delivered orally.

55. A method according to claim 50 wherein said cell is located in the tissues beneath the tongue, and said a polypeptide construct is delivered to the tissues beneath the tongue.

30 56. A method according to claim 50 wherein said cell is located in the skin, and said a polypeptide construct is delivered topically.

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57. A method according to claim 50 wherein said cell is in, or accessible via the blood, and said a polypeptide construct is delivered orally, to the vaginal and/or rectal tract, nasally, by inhalation through the mouth or nose, to the tissues beneath the tongue, or topically.

5 58. A polypeptide construct according to any of claims 1 to 7, 19 to 24, 40 to 48, or a method according to any of claims 11 to 18, 25 to 39, 49 to 57, wherein the single domain antibodies are humanized *Camelidae* VHs.

10 59. A polypeptide construct according to any of claims 1 to 7, 19 to 24, 40 to 48, 58, or a method according to any of claims 11 to 18, 25 to 39, 49 to 57, wherein said single domain antibody is an homologous sequence, a functional portion, or a functional portion of an homologous sequence of the full length single domain antibody.

15 60. A polypeptide construct according any of claims 1 to 7, 19 to 24, 40 to 48, 58 and 59 or a method according to any of claims 11 to 18, 25 to 39, 49 to 59, wherein the polypeptide construct is an homologous sequence, a functional portion, or a functional portion of an homologous sequence of the full length polypeptide construct.

20 61. A polypeptide construct according to any of claims 1 to 7, 19 to 24, 40 to 48, 58 to 60 or a method according to any of claims 11 to 18, 25 to 39, 49 to 60 wherein said single domain antibodies are *Camelidae* VHs.

62. A nucleic acid encoding a polypeptide construct according to any of claims 1 to 7, 19 to 24, 40 to 48, 58 to 61.

25 63. A composition comprising a polypeptide construct as defined in any of the preceding claims, together with a pharmaceutical carrier.

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